



**Workshop to Discuss a Draft Proposal
to Reduce Emissions from
Ship Auxiliary Engines**



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Summary of Draft Auxiliary Engine Proposal

- Requires use of cleaner marine distillate fuel
 - 7/1/06: MGO (or MDO with 0.5% sulfur limit)
 - 1/1/2010: MGO with 0.1% sulfur limit
- Applies to ships inside 24 nm Contiguous Zone

Proposed Sea Boundary*



Estimated Impact of Auxiliary Engine Transit Emissions on On-Shore Cancer Risk

Ports	Cases per Million	
	12-24 nm offshore	24-36 nm offshore
Los Angeles	0.5 to 1.0	< 0.1
San Diego	0.2 to 1.0	< 0.1
Oakland	0.1 to 0.5	< 0.1

- Only auxiliary engine emissions during transit were considered.
- The emission rate was based on the 2002 inventories of the Ports of LA & LB (4.5 T/Yr-mile)
- Considered only emissions that occurred with the distances indicated
- The ship lane width was assumed to be a half mile wide (800 meters).

Proposed Cleaner Fuel Provisions

- On July 1, 2006 require use of MGO (or MDO with a 0.5% sulfur limit)
 - ARB Ship Survey indicates average marine distillate is 0.5% sulfur
 - Maintains most of the emission reductions of previous 0.2% S limit
 - 0.2% S fuel not available at all ports

Proposed Cleaner Fuel Provisions (Continued)

- On January 1, 2010 require the use of MGO with a 0.1% sulfur limit
 - unchanged from last draft proposal
 - consistent with current EU proposal
 - subject to feasibility review of availability, cost, and technical considerations by July 1, 2008

Concept for Discussion: Mitigation Fee Provision

- Pay fee (to be determined) in lieu of compliance for up to 3 ship visits
- Option limited to special situations:
 - Unexpected redirection to CA port
 - Complying fuel/barge unavailable
 - Fuel found to be noncompliant at sea
 - One time visitor requires ship retrofits

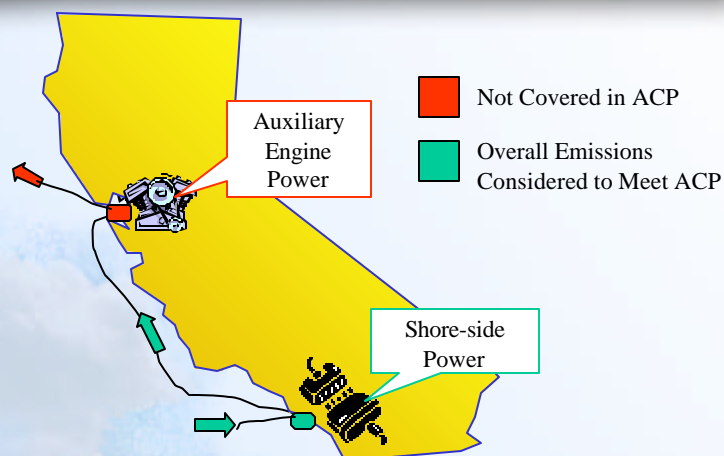
ACP Revisions

- ACP applications limited to single vessel emissions averaging
- Envision guidance document to assist applicants in estimating emissions and reductions as required by ACP
- ACP language revised to prohibit increases in pollutants that may result in adverse health impacts relative to baseline pre-regulation emissions

ACP Provisions on the Use of Shore-side Power

- For port visits where shore-side power is utilized, travel to and from the port (as well as dockside operation) will be considered to meet the emission reduction requirements of the ACP
- Travel to subsequent CA ports where shore-side power is not utilized will require use of cleaner fuels

How ACP Shore-Side Power Provision Applies to a Ship Visiting Two CA Ports



Other Elements

- Exemption for military vessels
- Added several definitions
- Increased extension for vessels needing retrofits to a maximum of one year

Estimated Auxiliary Engine Emissions and Reductions

Pollutant Type	California Emissions (TPD)	Emissions Regulated Zone (TPD)	Emission Reduction (TPD)
NOx	40	33	1.5
PM	3.6	3	2.0 (2.2 in '10)
SOx	30	25	16 (20 in' 10)

Total Estimated Cost and Cost-Effectiveness of Proposal

- Recurring annual cost (fuel): 35 million (39 million starting in 2010)
- Capital (retrofit) cost: 20 million
- Cost-Effectiveness: \$55k/ton PM reduced (53k starting in 2010)

Estimated Cost to a Typical Ship Operator

- Varies widely with number of ships and CA port visits. Regulation costs are relatively minor compared to ship operating costs
- Average annual recurring (fuel) cost: \$25,000 per company (\$28,000 starting in 2010)
- Greater fuel costs for diesel electric vessels. (e.g. typical cruise ship visit is ~\$20k versus 5k for typical container ship visit annually).
- Capital (retrofit) cost: Highly variable. None for most (\$100,000 per vessel requiring retrofits)

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